CLAIMS:

1. An optical analysis system (20) for determining an amplitude of a principal component of an optical signal, the optical analysis system comprising:

- a multivariate optical element (5, 6) for weighing the optical signal by a spectral weighing function, and
- a detector (7, 8) for detecting the weighed optical signal,

characterized in that the optical signal comprises the principal component and a further component, the detected weighed optical signal comprising a part relating to the amplitude of the principal component and a further part relating to a further amplitude of the further component, the optical analysis system (20) further comprising a modulator element (13) for modulating the detected weighed optical signal, a difference between the modulated detected weighed optical signal and the detected weighed optical signal relating to the amplitude of the principal component.

2. An optical analysis system (20) as claimed in Claim 1, further comprising a signal processor (9, 10) for determining the amplitude of the principal component from the difference between the modulated detected weighed optical signal and the detected weighed optical signal.

3. An optical analysis system (20) as claimed in Claim 2, wherein the modulator element (13) is able to modulate the detected weighed optical signal with a frequency and a phase, the signal processor (10) being able to determine the amplitude of the principal component from the difference between the modulated detected weighed optical signal and the detected weighed optical signal having the frequency and the phase.

4. An optical analysis system (20) as claimed in Claim 1, further comprising a light source (1) for providing light for illuminating a sample (2) comprising a substance having a concentration and thereby generating the principal component, the amplitude of the principal component relating to the concentration of the substance.

5. An optical analysis system (20) as claimed in Claim 4, wherein the modulator element (13) is arranged to modulate a property of the light provided by the light source (1), the part of the detected weighed optical signal relating to the amplitude of the principal component and the further part of the detected weighed optical signal relating to a further amplitude of the further component depending on the property the light in different ways.

6. An optical analysis system (20) as claimed in Claim 5, wherein the property of the light comprises an intensity of the light.

7. An optical analysis system (20) as claimed in Claim 5, wherein the property of the light comprises a polarization state of the light.

8. An optical analysis system (20) as claimed in Claim 5, wherein the property of the light comprises a spectral bandwidth of the light.

9. An optical analysis system (20) as claimed in Claim 5, wherein the property of the light comprises a wavelength of the light.

10. An optical analysis system (20) as claimed in Claim 1, wherein the modulator element (13) is arranged to modulate a property of the optical signal, the part of the detected weighed optical signal relating to the amplitude of the principal component and the further part of the detected weighed optical signal relating to a further amplitude of the further component depending on the property the optical signal in different ways.

11. An optical analysis system (20) as claimed in Claim 10, wherein the property of the optical signal comprises a polarization state of the optical signal.

12. An optical analysis system (20) as claimed in Claim 1, wherein the weighing function of the multivariate optical element (5, 6) is adjustable and the modulator element (13) is arranged to modulate the weighing function of the multivariate optical element (5, 6), the part of the detected weighed optical signal relating to the amplitude of the principal component and the further part of the detected weighed optical signal relating to a further amplitude of the further component depending on the modulated weighing function in different ways.

13. An optical analysis system (20) as claimed in Claim 12, wherein the multivariate optical element (5, 6) comprises a dispersive element for spectrally dispersing the optical signal and an weighing element with adjustable segments for receiving spectral components of the spectrally dispersed optical signal and for distributing the optical signal weighed by the spectral weighing function to the detector, the modulator element being able to modulate the adjustable segments.

14. A blood analysis system (40) comprising an optical analysis system (20) as claimed in Claim 4, the sample comprising blood.

15. A method of determining an amplitude of a principal component of an optical signal, the method comprising the steps of:

- weighing the optical signal by a multivariate optical element (5, 6) having a spectral weighing function, and
- detecting the weighed optical signal by a detector (7, 8),

characterized in that the optical signal comprises the principal component and a further component, the detected weighed optical signal comprising a part relating to the amplitude of the principal component and a further part relating to a further amplitude of the further component, the method further comprising the step of modulating the detected weighed optical signal by a modulator element (13), a difference between the modulated detected weighed optical signal and the detected weighed optical signal relating to the amplitude of the principal component.

16. A method as claimed in claim 15, further comprising the step of calculating the amplitude of the principal component from the modulated weighed optical signal and the unmodulated weighed optical signal.